Colonic Obstruction Caused by Sigmoid Volvulus Combined with a Transomental Hernia: A Case Report

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The case of sigmoid volvulus combined with a transomental hernia is reported. A 70-year-old man was admitted to our hospital with mild abdominal pain and distension. Although no signs of peritoneal irritation were apparent, a plain abdominal X-ray showed a markedly dilated loop of the sigmoid colon, and CT revealed a whirl pattern of the sigmoid mesentery. These findings suggested sigmoid volvulus. Colonoscopic reduction was attempted as an initial nonoperative treatment, and an urgent laparotomy was performed after the reduction failed. The sigmoid loop was herniated through the great omentum, with torsion in the clockwise direction. The colon was manually untwisted through the great omentum, with torsion in the clockwise direction. The sigmoid loop was released by dividing the great omentum. During this one-stage operation, intraoperative colonic irrigation, sigmoid resection, and primary anastomosis were performed. The postoperative course was uneventful. Although sigmoid volvulus combined with a transomental hernia is rare, urgent surgical intervention is essential on failure of endoscopic reduction.

Key Words: Sigmoid volvulus, Transomental hernia

INTRODUCTION

Although sigmoid volvulus is an uncommon obstructive emergency, it constitutes a third of all the leading causes of large bowel obstruction in adults.1-3 Anatomic predisposition is the most important factor in the development of sigmoid volvulus, but other factors have also been reported.4-7 Although an internal hernia is a relatively rare cause of bowel obstruction, it can act as a secondary causative factor in the development of sigmoid volvulus.8 Nonoperative reduction is the recommended initial treatment unless bowel gangrene or peritonitis is present. Flexible sigmoidoscopic or colonoscopic reduction with rectal tube placement has been successfully employed.1,8,9 However, an unsuccessful attempt at nonoperative reduction must be followed with minimal delay by emergency surgery.10-11 We report the case of a male patient with sigmoid volvulus combined with a transomental hernia, who was treated using operative detorsion, omental division, and sigmoid resection after the failure of sigmoidoscopic reduction.

CASE REPORT

A 70-year-old man was admitted to the Emergency Department, Ilsan Paik Hospital, with mild abdominal pain and distension that had lasted for 3 days. He did not have a history of a laparotomy or abdominal trauma. Approximately 6 months before this complaint, he had experienced a similar attack followed by spontaneous remission. No specific diagnosis of the attack was made at that time. Our abdominal examination revealed mild distension and hyperactive bowel sounds. Signs of peritoneal irritation were not apparent. The leukocyte count was 5,400/mm³, and there were no remarkable laboratory data except for a decreased hemoglobin concentration of 8.8 g/dl. A plain abdominal X-ray showed a loop of a
a markedly dilated sigmoid colon and proximal bowel, with relatively less gas in the rectum (Fig. 1). An emergent CT revealed a whirl pattern caused by the fat density in the twisted mesentery along with its vessels and a markedly dilated sigmoid colon in a closed loop, suggesting sigmoid volvulus. There was no evidence of bowel ischemia or pneumoperitoneum (Fig. 2).

We attempted a colonoscopic reduction as the initial nonoperative treatment. The colonoscopic finding did not reveal bowel necrosis. Further advancement of the scope beyond the constricted lesion, however, was not possible due to marked pain and bowel edema. Following the failure of colonoscopic reduction, we decided to perform an emergent laparotomy; however, the patient was hesitant because of the fear of postoperative morbidity and mortality. Therefore, we performed the laparotomy on the 2nd hospital day.

When the abdomen was opened, the dilated sigmoid colonic loop was exposed. The sigmoid loop was herniated through the great omentum, with torsion in the clockwise direction; the herniated loop was severely redundant and had an elongated mesentery (Fig. 3). The colon was manually untwisted in the counter-clockwise direction. The sigmoid loop was released by division of the great omentum. In the course of the one-stage operation, the patient was managed by intraoperative colonic irrigation, sigmoid resection (approximately 50 cm in length), and...
primary anastomosis. The postoperative course was uneventful. The patient was discharged on the 10th postoperative day. He was healthy, and there was no evidence of recurrence of volvulus at the time of this report.

DISCUSSION

Colonic volvulus constitutes a third of all the leading causes of large bowel obstruction, and sigmoid volvulus is the most common form of volvulus of the gastrointestinal tract.1-3 Sigmoid volvulus is a rare cause of intestinal obstruction in Western countries. African, Asian, Middle Eastern, Eastern European, and South American countries, however, are endemic regions where sigmoid volvulus accounts for up to 30% of all intestinal obstructions.3 The pathogenesis of sigmoid volvulus is obscure, and it is an abdominal emergency that is more common in the elderly, particularly in patients with medical or psychiatric problems.3,12 It is well known that chronic constipation, high-fiber diet, chronic use of laxatives, pregnancy, pelvic tumor, and abdominal surgery are the predisposing factors of sigmoid volvulus and that these conditions may produce a large, redundant sigmoid colon with an elongated mesentery, which is prone to twisting on itself.4-7 In the present case, the patient had a large, severely redundant sigmoid colon and an omental defect. Thus, we presume that the previous similar attack in which the patient experienced spontaneous remission was associated with volvulus or a transomental hernia.

The diagnosis of sigmoid volvulus can be established based on clinical, radiologic (plain abdominal X-ray and CT), endoscopic, and, sometimes, operative findings.8,9 The plain abdominal X-ray usually reveals a markedly dilated sigmoid colon and proximal bowel, with relatively less gas in the rectum, which has an “inverted U” shape.11 Grossmann et al. reported that the diagnostic accuracy of a plain abdominal X-ray is 85% and that a further diagnostic workup at this point is unwarranted because it may delay definitive treatment.1 In our case, the plain abdominal X-ray showed a typical finding of sigmoid volvulus. However, we performed CT without delay in order to confirm the diagnosis and to rule out other causes of intestinal obstruction. CT has been performed in the case of patients suspected of having a bowel obstruction. Although preoperative CT may demonstrate ischemia in the bowel or reveal the cause of bowel obstruction, a transomental internal hernia is not clearly detected, as in our case.14

Several methods can be used for the treatment of sigmoid volvulus, taking into consideration the general condition of the patient, associated diseases, and other factors. Nonoperative reduction using a sigmoidoscope or colonoscope and barium or saline enemas is advocated as the initial treatment.1,11,15,16 The most highly recommended method for initial nonoperative treatment is flexible sigmoidoscopic or colonoscopic reduction with or without rectal tube placement. Endoscopic reduction has the dual advantage of facilitating both evaluation of the viability of the colonic mucosa and identification of the other causes of the colonic obstruction.8,15,16 The success rate with endoscopic reduction is reported to be 78∼88%. An unsuccessful endoscopic reduction should be followed with minimal delay by emergent surgery.1,8,9 In the present case, we presumed that the transomental hernia, which was diagnosed on the basis of the operative finding and not the preoperative workup, contributed to the failure of the endoscopic reduction.

Internal hernias that are caused by a defect in the lesser omentum, great omentum, and mesentery are rare.14,17,18 Transomental hernias, which constitute 1∼4% of all internal hernias, are infrequently diagnosed preoperatively, as in our case.18 These defects may be congenital, traumatic, postoperative, postinflammatory, or idiopathic. We speculate that the defect in the great omentum in our case was idiopathic.

The standard treatment considered for sigmoid volvulus has been resection of the involved segment after nonoperative reduction because of the high recurrence rate with nonoperative reduction alone.6,8,15,16,19,20 However, many patients refuse to undergo definitive surgery because the symptoms are relieved after the nonoperative reduction or because of fear of postoperative morbidity and mortality. Chung et al. reported that 50% of the patients refused definitive surgery following nonoperative reduction and that 86% of those patients subsequently showed recurrences.19 Surgery is, therefore, recommended at the time of the diagnosis of sigmoid volvulus. Furthermore,
in the case of failure of nonoperative reduction urgent surgical intervention is indicated. In our case, we decided to perform an emergent laparotomy after failure of the endoscopic reduction; however, the patient was hesitant because his symptoms had been temporarily relieved although endoscopic reduction had failed and because he was afraid of postoperative morbidity and mortality.

Of the various surgical procedures for sigmoid volvulus, a sigmoid resection with or without primary anastomosis is considered the definitive treatment. The choice of primary anastomosis or Hartmann’s procedure is based on several considerations. Hartmann’s procedure may be lifesaving in the case of gangrenous or unstable patients, and it does not pose a risk of anastomotic dehiscence. However, it is associated with risks of morbidity caused by stoma complications and mortality and necessitates a second operation. The patient in our case requested a one-stage operation. Because the incidence of anastomotic dehiscence in an unprepared bowel is high, we performed intraoperative colonic irrigation. The successful application of intraoperative colonic irrigation followed by a one-stage operation has been reported in the treatment of an unprepared bowel with sigmoid volvulus. Although the procedure increased the operative time by 1 hour, the patient recovered without any postoperative complications.

**CONCLUSION**

Although sigmoid volvulus combined with a transomental hernia is rare, urgent surgical intervention after the failure of endoscopic reduction is essential. In the case of a one-stage operation, intraoperative colonic irrigation may be an effective method in a patient with an unprepared bowel for whom endoscopic reduction has failed.

**REFERENCES**

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대망탈장 동반한 에스상결장 염전에 의한 대장폐쇄 1예

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70세 남자가 수일 전부터 지속된 부부통과 복부팽만을 주소로 응급실로 내원하였다. 문건상 복막염을
의심할 수 있는 소견은 없었으나 단순복부사진에서 에스상결장이 심하게 확장된 소견을 보였고 전산화단
층촬영에서 에스상결장 장간막이 나선형태를 보여 에스상결장 염전으로 진단되었다. 비수술적 치료로써 내
시경적 감압술을 시도하였으나 실패하여 수술을 시행하게 되었다. 수술소견으로 에스상결장이 대망의 결손
부위를 통하여 탈장되어 있었고 시계방향으로 염전되어 있었다. 수술적 치료로써 반시계방향으로 에스상결
장을 회전시킨 후 대망을 분할하여 에스상결장을 환원시켰고 일단계 수술을 위하여 수술장 내에서 장체
적 후 에스상결장절제 및 문합술을 시행하였다. 수술 후 합병증은 없었으며 수술 후 10일째에 퇴원하였다.
대망을 통한 탈장이 동반된 에스상결장 염전이 수술 전에 진단되는 경우는 드물고 합병증이 없는 에스상결
장의 치료로서 우선적으로 내시경적 감압술이 시도될 수 있으나 이러한 비수술적 치료가 실패한 경우에
는 긴급한 수술적 치료가 필요하다.

중심단어: 에스상결장염전, 대망탈장